IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I, SALLY LESLEY HEDLEY, B.A., M.I.L., M.I.T.I., declare

1. That I am a citizen of the United Kingdom of Great Britain and Northern Ireland, residing at 29 Parkholme Road, London E8 3AG, United Kingdom.

2. That I am well acquainted with the German and English languages.

3. That the attached is a true translation into the English language of the specification of Swiss Patent Application No. 2002 1123/02 and of the Official Certificate attached thereto.

4. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardise the validity of the patent application in the United States of America or any patent issuing thereon.

Declared this 10th day of November, 2004

Sally Hedley.

SALLY HEDLEY

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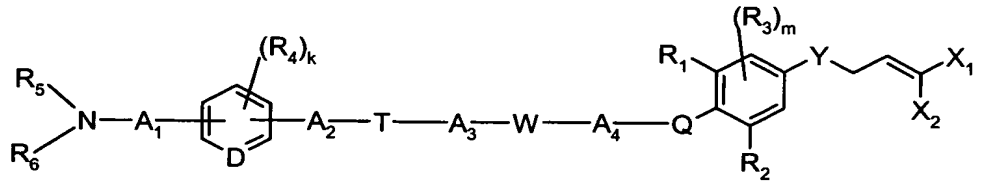
Novel pesticides

The present invention relates (1) to compounds of formula



(I),

wherein

A_1, A_2 and A_3 are each independently of the others a bond or a C_1-C_6alkylene bridge which is unsubstituted or substituted by from one to six identical or different substituents selected from C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl and C_1-C_3haloalkyl;

A_4 is a C_1-C_6alkylene bridge which is unsubstituted or substituted by from one to six identical or different substituents selected from C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl and C_1-C_3haloalkyl;

D is CH or N;

W is O, NR_7, S, SO, SO_2, -C(=O)-O-, -O-C(=O)-, -C(=O)-NR_8- or -NR_8-C(=O)-;

T is a bond, O, NH, NR_7, S, SO, SO_2, -C(=O)-O-, -O-C(=O)-, -C(=O)-NR_8- or -NR_8-C(=O)-;

Q is O, NR_7, S, SO or SO_2;

Y is O, NR_7, S, SO or SO_2;

X_1 and X_2 are each independently of the other fluorine, chlorine or bromine;

R_1, R_2 and R_3 are each independently of the others H, halogen, CN, nitro, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkylcarbonyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6-alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy, C_1-C_6-alkoxycarbonyl or C_2-C_6haloalkenyloxy; the substituents R_3 being independent of one another when m is 2;

R_4 is H, halogen, CN, nitro, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkylcarbonyl, C_2-C_6-alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy, C_1-C_6alkoxycarbonyl or C_2-C_6haloalkenyloxy; the substituents R_4 being independent of one another when k is greater than 1;

R_5 is H, CN, OH, C_1-C_6alkyl, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy, -C(=O)R_9, -C(=S)R_9, phenyl, benzyl; or phenyl, phenylcarbonyl or benzyl each of which is substituted in the aromatic ring by from one to five identical or different substituents selected from the group consisting of halogen, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6-alkoxy, hydroxy, cyano and nitro;

R_6 is H, CN, C_1-C_6alkyl, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl, C_1-C_6haloalkyl, -C(=O)R_9, -C(=S)R_9, phenyl, benzyl; or phenyl, phenylcarbonyl or benzyl each of which is substituted in the aromatic ring by from one to five identical or different substituents selected from the group consisting of halogen, C_1-C_6alkyl, halo-C_1-C_6alkyl, C_1-C_6alkoxy, halo-C_1-C_6-alkoxy, hydroxy, cyano and nitro; or

R_5 and R_6 together form a four- to eight-membered, straight-chain or branched alkylene bridge wherein a CH_2 group may have been replaced by O, S or NR_{10}, and the alkylene bridge is unsubstituted or substituted by from one to four identical or different substituents selected from C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl and C_1-C_3haloalkyl; or

R_6 is -C(=O)R_9 or -C(=S)R_9, and R_5 and R_9 together form a three- to eight-membered, straight-chain or branched alkylene bridge wherein a CH_2 group may have been replaced by O, S or NR_{10}, and the alkylene bridge is unsubstituted or substituted by from one to four identical or different substituents selected from C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl and C_1-C_3haloalkyl; or

R_5 and R_6 are each independently of the other -C(=O)R_9 or -C(=S)R_9, and the two R_9 together form a two- to eight-membered, straight-chain or branched alkylene bridge wherein a CH_2 group may have been replaced by O, S or NR_{10}; and the alkylene bridge is unsubstituted or substituted by from one to four identical or different substituents selected from C_3-C_8-cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl and C_1-C_3haloalkyl;

R_7 is H, C_1-C_6alkyl, C_1-C_3haloalkyl, C_1-C_3haloalkylcarbonyl, C_1-C_6alkoxyalkyl, C_1-C_6alkylcarbonyl or C_3-C_8cycloalkyl;

R_8 is H, C_1-C_6alkyl, C_1-C_3haloalkyl, C_1-C_3haloalkylcarbonyl, C_1-C_6alkoxyalkyl, C_1-C_6alkylcarbonyl or C_3-C_8cycloalkyl;

R_9 is C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy, C_3-C_6cycloalkyl, phenyl, benzyl; or phenyl or benzyl each of which is unsubstituted or substit-

uted by from one to three identical or different substituents selected from halogen, CN, nitro, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkylcarbonyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_1-C_6alkoxycarbonyl, C_1-C_3haloalkoxycarbonyl and C_2-C_6haloalkenyloxy;

R_{10} is H, C_1-C_6alkyl, C_1-C_3haloalkyl, C_1-C_3haloalkylcarbonyl, C_1-C_6alkoxyalkyl, C_1-C_6alkylcarbonyl or C_3-C_8cycloalkyl;

k, when D is nitrogen, is 1, 2 or 3; or, when D is CH, is 1, 2, 3 or 4; and

m is 1 or 2;

and, where applicable, their possible E/Z isomers, E/Z isomeric mixtures and/or tautomers, in each case in free form or in salt form, to a process for the preparation of those compounds, E/Z isomers and tautomers and to their use, to pesticidal compositions in which the active ingredient has been selected from those compounds, E/Z isomers and tautomers, and to a process for the preparation of those compositions and to their use, to intermediates and, where applicable, their possible E/Z isomers, E/Z isomeric mixtures and/or tautomers, in free form or in salt form, for the preparation of those compounds, where applicable to tautomers, in free form or in salt form, of those intermediates and to a process for the preparation of those intermediates and their tautomers and to their use.

Certain dihalovinyl derivatives are proposed in the literature as active ingredients in pesticidal compositions. The biological properties of those known compounds are not entirely satisfactory in the field of pest control, however, for which reason there is a need to provide further compounds having pesticidal properties, especially for controlling insects and members of the order Acarina, that problem being solved according to the invention by the provision of the present compounds of formula (I).

The compounds of formula (I) and, where applicable, their tautomers are able to form salts, e.g. acid addition salts. The latter are formed, for example, with strong inorganic acids, such as mineral acids, e.g. sulfuric acid, a phosphoric acid or a hydrohalic acid, with strong organic carboxylic acids, such as unsubstituted or substituted, e.g. halo-substituted, C_1-C_4alkanecarboxylic acids, for example acetic acid, saturated or unsaturated dicarboxylic acids, e.g. oxalic, malonic, maleic, fumaric or phthalic acid, hydroxycarboxylic acids, e.g. ascorbic, lactic, malic, tartaric or citric acid, or benzoic acid, or with organic sulfonic acids, such as unsubstituted or substituted, e.g. halo-substituted, C_1-C_4alkane- or aryl-sulfonic acids, e.g. methane- or p-toluene-sulfonic acid. Furthermore, compounds of formula (I)

having at least one acid group are able to form salts with bases. Suitable salts with bases are, for example, metal salts, such as alkali metal or alkaline earth metal salts, e.g. sodium, potassium or magnesium salts, or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di- or tri-lower alkylamine, e.g. ethyl-, diethyl-, triethyl- or dimethyl-propyl-amine, or a mono-, di- or tri-hydroxy-lower alkylamine, e.g. mono-, di- or tri-ethanolamine. It may also be possible for corresponding internal salts to be formed. On the one hand the free form is preferred. Of the salts of compounds of formula (I), preference is given to agrochemically advantageous salts. Hereinabove and hereinbelow any reference to the free compounds of formula (I) or to their salts is to be understood as including, where appropriate, the corresponding salts or the free compounds of formula (I), respectively. The same applies to tautomers of compounds of formula (I) and their salts.

The general terms used hereinabove and hereinbelow have the meanings given below, unless defined otherwise.

Halogen, as a group *per se* and as a structural element of other groups and compounds, such as haloalkyl, halocycloalkyl, haloalkenyl, haloalkynyl and haloalkoxy, is fluorine, chlorine, bromine or iodine, especially fluorine, chlorine or bromine, more especially fluorine or chlorine, especially chlorine.

Unless defined otherwise, carbon-containing groups and compounds each contain from 1 up to and including 20, preferably from 1 up to and including 18, especially from 1 up to and including 10, more especially from 1 up to and including 6, especially from 1 up to and including 4, especially from 1 up to and including 3, more especially 1 or 2, carbon atoms; methyl is especially preferred.

Alkylene is a straight-chain or branched bridging member and is especially $-CH_2-$, $-CH_2CH_2-$, $-CH_2-CH_2-CH_2-$, $-CH_2-CH_2-CH_2-CH_2-$, $-CH_2-CH_2-CH_2-CH_2-CH_2-$, $-CH(CH_3)-$, $-CH_2(CH_3)CH_2-CH_2-$, $-CH(C_2H_5)-$, $-C(CH_3)_2-$, $-CH(CH_3)CH_2-$, $-CH(CH_3)CH(CH_3)-$, or $-CH_2C(CH_3)_2-CH_2-$.

Alkyl, as a group *per se* and as a structural element of other groups and compounds, such as haloalkyl, alkoxy, alkoxyalkyl, haloalkoxy, alkoxycarbonyl, alkylthio, haloalkylthio, alkylsulfonyl and alkylsulfonyloxy, is - in each case giving due consideration to the number of carbon atoms contained in the group or compound in question - either straight-chained, e.g. methyl, ethyl, n-propyl, n-butyl, n-hexyl, n-octyl, n-decyl, n-dodecyl, n-hexadecyl or n-octadecyl, or branched, e.g. isopropyl, isobutyl, sec-butyl, tert-butyl, isopentyl, neopentyl or isohexyl.

Alkenyl and alkynyl - as groups *per se* and as structural elements of other groups and compounds, such as haloalkenyl, haloalkynyl, alkenyloxy, haloalkenyloxy, alkynyloxy or haloalkynyloxy - are straight-chain or branched and each contains two or preferably one unsaturated carbon-carbon bond(s). There may be mentioned by way of example vinyl, prop-2-en-1-yl, 2-methylprop-2-en-1-yl, but-2-en-1-yl, but-3-en-1-yl, prop-2-yn-1-yl, but-2-yn-1-yl and but-3-yn-1-yl.

Cycloalkyl - as a group *per se* and as a structural element of other groups and compounds, such as alkyl - is cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl or cyclooctyl. Cyclopentyl and cyclohexyl, and especially cyclopropyl, are preferred.

Halo-substituted carbon-containing groups and compounds, such as haloalkyl and haloalkoxy, may be partially halogenated or perhalogenated, the halogen substituents in the case of polyhalogenation being the same or different. Examples of haloalkyl - as a group *per se* and as a structural element of other groups and compounds, such as haloalkoxy - are methyl substituted from one to three times by fluorine, chlorine and/or bromine, such as CHF_2, CF_3 or CH_2Cl; ethyl substituted from one to five times by fluorine, chlorine and/or bromine, such as CH_2CF_3, CF_2CF_3, CF_2CCl_3, CF_2CHCl_2, CF_2CHF_2, CF_2CFCl_2, CH_2CH_2Cl, CF_2CHBr_2, CF_2CHClF, CF_2CHBrF or $CClFCHClF$; propyl or isopropyl substituted from one to seven times by fluorine, chlorine and/or bromine, such as $CH_2CHBrCH_2Br$, CF_2CHFCF_3, $CH_2CF_2CF_3$, $CF_2CF_2CF_3$, $CH(CF_3)_2$ or $CH_2CH_2CH_2Cl$; and butyl or an isomer thereof substituted from one to nine times by fluorine, chorine and/or bromine, such as $CF(CF_3)CHFCF_3$, $CF_2(CF_2)_2CF_3$ or $CH_2(CF_2)_2CF_3$.

Aryl is especially phenyl or naphthyl, preferably phenyl.

Preferred embodiments within the scope of the invention are

(2) compounds according to (1) of formula (I) wherein X_1 and X_2 are chlorine or bromine, especially chlorine;

(3) compounds according to (1) or (2) of formula (I) wherein A_1 is a bond;

(4) compounds according to (1) to (3) of formula (I) wherein the group A_2-T-A_3 is a bond;

(5) compounds according to (1) to (4) of formula (I) wherein W is oxygen, -C(=O)O- or -C(=O)NH-, especially O;

(6) compounds according to (1) to (5) of formula (I) wherein A_4 is a straight-chain

alkylene bridge, especially ethylene, propylene or butylene, more especially propylene;

(7) compounds according to (1) to (6) of formula (I) wherein Q is oxygen;

(8) compounds according to (1) to (7) of formula (I) wherein Y is oxygen;

(9) compounds according to (1) to (8) of formula (I) wherein R_1 and R_2 are bromine or chlorine, especially chlorine;

(10) compounds according to (1) to (9) of formula (I) wherein R_3 is hydrogen;

(11) compounds according to (1) to (10) of formula (I) wherein R_4 is hydrogen;

(12) compounds according to (1) to (11) of formula (I) wherein R_5 is H, C_1-C_6alkyl, C_3-C_8cycloalkyl, C_3-C_8cycloalkyl-C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy;

(13) compounds according to (1) to (12) of formula (I) wherein R_6 is -C(=O)R_9 or -C(=S)R_9, and R_9 is C_1-C_6alkyl, C_1-C_6haloalkyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_2-C_6alkenyloxy, C_2-C_6haloalkenyloxy, C_2-C_6alkynyloxy, C_3-C_6cycloalkyl or phenyl;

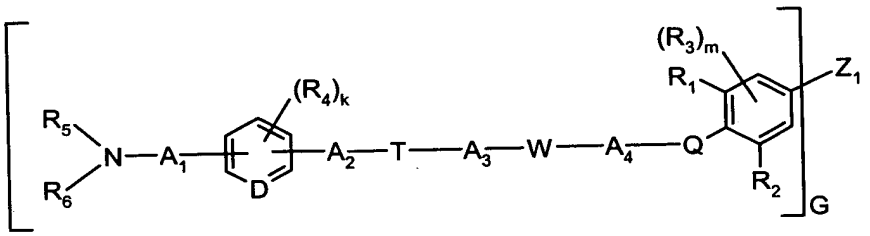
(14) compounds according to (1) to (3) and (5) to (12) of formula (I) wherein A_2 is a bond, T is oxygen and A_3 is a C_1-C_6alkylene bridge;

(15) compounds according to (1) to (3) of formula (I) wherein A_2 is a bond, T is -C(=O)O- wherein the oxygen is bonded to A_3, or is –C(=O)NH- wherein NH is bonded to A_3, and A_3 is a C_1-C_6alkylene bridge.

Special preference is given to the compounds listed in the Tables.

The invention relates also to a process for the preparation of a compound of formula (I), or a salt thereof, wherein

(a) a compound of formula



(II)

wherein A_1, A_2, A_3, A_4, D, W, Q, T, R_1, R_2, R_3, R_4, R_5, R_6, m and k are as defined for formula (I) under (1), Z_1 is $-C(=O)R_{11}$ and R_{11} is H or C_1-C_6alkyl, is converted in the presence of an oxidising agent, especially a peracid, into a compound of formula

$$G–Z_{2a} \text{ (IIIa)};$$

wherein Z_{2a} is O-C(=O)-R_{12} and R_{12} is C_1-C_6alkyl, and G denotes the part of the formula in the brackets designated G in formula (II); either

(b_1) a compound of formula (IIIa) above or of formula

$$G\text{-}Z_{2b} \text{ (IIIb)},$$

wherein G denotes the part of the formula in the brackets designated G in formula (II), Z_{3b} is a radical of formula $-Y\text{-}C(=O)R_{13}$, W is as defined for formula (I) under (1), and R_{13} is C_1-C_{12}alkyl unsubstituted or substituted by from one to three identical or different halogen substituents, or is phenyl unsubstituted or substituted by from one to three identical or different substituents selected from halogen, CN, nitro, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkylcarbonyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_1-C_6alkoxycarbonyl and C_2-C_6haloalkenyloxy, is converted by hydrolytic cleavage into a compound of formula

$$G\text{-}Z_3 \text{ (IV)},$$

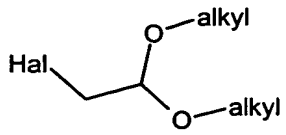
wherein G denotes the part of the formula in the brackets designated G in formula (II), Z_3 is YH, and Y is as defined for formula (I) under (1); or

(c) a compound of formula

$$G–Z_4 \text{ (V)},$$

wherein Z_4 is Y-CH_2-phenyl, wherein the phenyl radical is unsubstituted or substituted by from one to three identical or different substituents selected from halogen, CN, nitro, C_1-C_6alkyl, C_1-C_6haloalkyl, C_1-C_6alkylcarbonyl, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6alkynyl, C_1-C_6alkoxy, C_1-C_6haloalkoxy, C_1-C_6alkoxycarbonyl or C_2-C_6haloalkenyloxy, G denotes the part of the formula in the brackets designated G in formula (II), and Y is as defined for formula (I), is converted by removal of the benzyl group into a compound of formula (IV), as defined above;

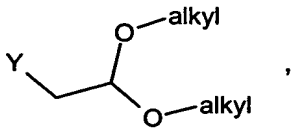
(d) the compound of formula (IV) so obtained is reacted in the presence of a base with a compound of formula



wherein Hal is halogen, preferably bromine or chlorine, and alkyl is C_1-C_6alkyl, or the two alkyl radicals together form a C_3-C_8alkylene bridge, to form a compound of formula

G-Z_5 (VI),

wherein G denotes the part of the formula in the brackets designated G in formula (II), and Z_5 is



,

wherein alkyl and Y are as defined above;

(e) the compound of formula (VI) so obtained is converted by deprotection of the acetal function in the presence of an acid into a compound of formula

G-Z_6 (VII),

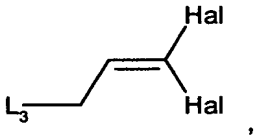
wherein Z_6 is a group –Y-CH_2-C(=O)H, G is as defined above for the compound of formula (II), and Y is as defined for formula (I) under (1), either

(f_1) for the preparation of a compound of formula (I) wherein X_1 and X_2 are chlorine or bromine, a compound of formula (VII) is reacted in the presence of a phosphine with a compound of formula $C(X)_4$ wherein X is chlorine or bromine; or

(f_2) for the preparation of a compound of formula (I) wherein X_1 and X_2 are chlorine, a compound of formula (VII) is reacted first with CCl_3-COOH or with chloroform in the presence of a strong base, then with acetic anhydride and subsequently with powdered zinc in acetic acid; or

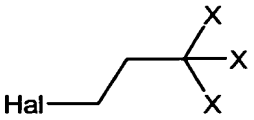
(f_3) for the preparation of a compound of formula (I) wherein X_1 is fluorine and X_2 is chlorine or bromine, a compound of formula (VII) is reacted first with a compound of the formula CF_2X_2, of the formula CFX_3, of the formula $CF_2XC(=O)ONa$ or of the formula $CFX_2C(=O)ONa$, in the presence of a phosphine; or

(g_1) for the preparation of a compound of formula (I) wherein X_1 and X_2 are chlorine or bromine, a compound of formula (IV) is reacted in the presence of base with a compound of formula



wherein L_3 is a leaving group, preferably chlorine or bromine, and Hal is chlorine or bromine; or

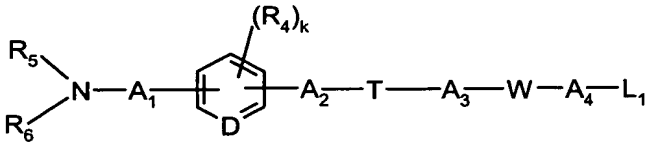
(g_2) for the preparation of a compound of formula (I) wherein X_1 and X_2 are chlorine or bromine, a compound of formula (IVa) or (IVb) is reacted in the presence of a base with a compound of formula



wherein Hal is halogen and X is chlorine or bromine.

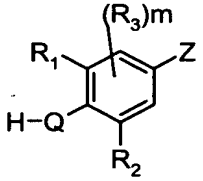
The invention relates also to

(h) a process for the preparation of a compound of formula (I), as defined under (1), and wherein Q is O, NR_7 or S, and R_7 is as defined for formula (I) under (1), wherein a compound of formula



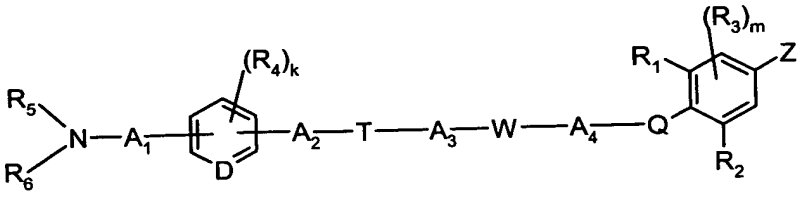
(VIII),

wherein A_1, A_2, A_3, A_4, D, W, T, R_4, R_5, R_6 and k are as defined for formula (I) under (1) and L_1 is a leaving group, in the presence of a base with a compound of formula



(IX),

wherein R_1, R_2, R_3 and m are as defined for formula (I) under (1), Q is O, NR_7 or S and Z is one of the radicals Z_1 to Z_6 as defined for the above formulae (II) to (VII), and R_7 is as defined for formula (I) under (1), and the resulting compound of formula



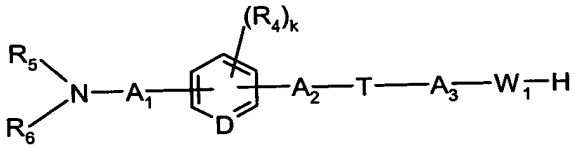
(X/a to X/f),

wherein A_1, A_2, A_3, A_4, D, W, Q, T, R_1, R_2, R_3, R_4, R_5, R_6, m and k are as defined for formula (I) under (1) and Z is one of the radicals Z_1 to Z_6 as defined for formulae (II) to (VII) indicated above, is, as necessary, that is to say according to the meaning of the radical Z, reacted further analogously to one or more of process steps (a) to (g).

In the compounds of formulae X/a to X/f, Z in compound X/a has the same meanings as Z_1 in the compound of formula (II), and Z in compound X/b has the same meanings as Z_2 as defined for formula (III), and so on.

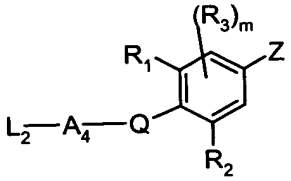
The invention relates also to

(i_1) a process for the preparation of a compound of formula (I) as defined above wherein W is O, NR_7, S, -O-C(=O)- or -NR_8-C(=O)-, and R_7 and R_8 are as defined for formula (I) under (1), wherein a compound of formula



(XI)

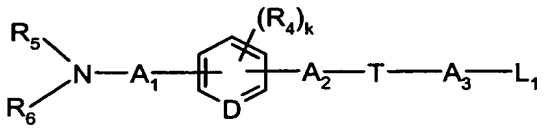
wherein A_1, A_2, A_3, D, T, R_4, R_5, R_6 and k are as defined for formula (I) under (1), W_1 is O, NR_7, S or -NR_8- and R_7 is as defined for formula (I) under (1), is reacted with a compound of formula



(XII/a to XII/f),

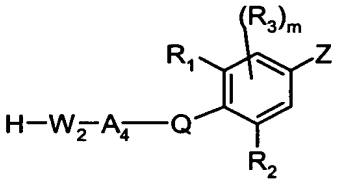
wherein A_4, R_1, R_2, R_3, Q and m are as defined for formula (I) under (1), L_2 is a leaving group or a group Hal-C(=O)- wherein Hal is a halogen atom, preferably chlorine or bromine, and Z is one of the radicals Z_1 to Z_6 as defined in formulae (II) to (VII) indicated above; or

(i_2) for the preparation of a compound of formula (I) as defined above wherein W is O, NR_7, S, -C(=O)-O- or -C(=O)-NR_8-, and R_7 and R_8 are as defined for formula (I) under (1), wherein a compound of formula



(XIII)

wherein A_1, A_2, A_3, D, T, R_4, R_5, R_6 and k are as defined for formula (I) under (1), and L_1 is a leaving group or a group -C(=O)-Hal wherein Hal is a halogen atom, preferably chlorine or bromine, is reacted with a compound of formula



(XIV/a to XIV/f),

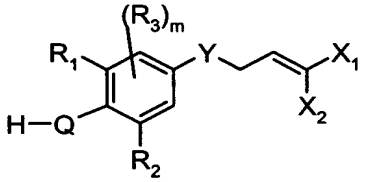
wherein W_2 is O, NR_7, S or NR_8, and R_7 and R_8 are as defined for formula (I) under (1),

and a resulting compound of formula (Xa) to (Xf) as defined above is, as necessary, that is to say according to the meaning of the radical Z, reacted further analogously to one or more of process steps (a) to (g).

In the compounds of formulae XII/a to XII/f and XIV/a to XIV/f, the radicals Z are as defined above for the compounds X/a to X/f; that is to say, for example, Z in the compound of formula XII/a has the same meanings as Z_1 in the compound of formula (II), and Z in compound XII/b has the same meanings as Z_2 as defined for formula (III), and so on.

The invention relates also to

(k) a process for the preparation of a compound of formula (I) as defined above under (1), wherein a compound of formula (VIII) as defined above is reacted in the presence of a base with a compound of formula

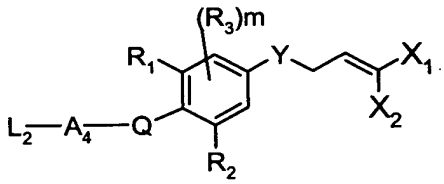


(XV),

wherein R_1, R_2, R_3, Q, X_1, X_2, Y and m are as defined for formula (I) under (1).

The invention relates also to

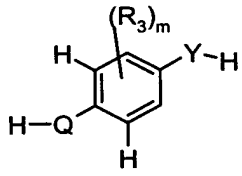
(l) a process for the preparation of a compound of formula (I) as defined above under (1), wherein a compound of formula (XI) as defined above is reacted in a manner analogous to process variant (i) with a compound of formula



(XVI),

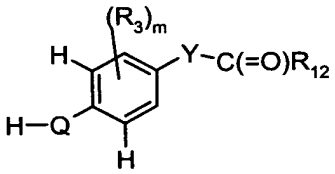
wherein A_4, R_1, R_2, R_3, Q, Y, X_1, X_2 and m are as defined for formula (I) under (1), and L_2 is as defined for formula (XII).

The compounds of formulae (IIIa) and (IIIb) wherein R_1 and R_2 are halogen can be obtained by reacting a compound of formula



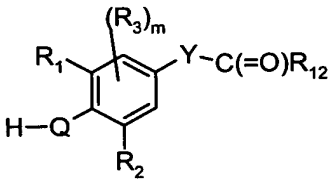
(XVII),

wherein R_3, Q, Y and m are as defined for formula (I) under (1) with a compound of the formula Hal-C(=O)-R_{12} wherein R_{12} is as defined above, halogenating the resulting compound of formula



(XVIII),

wherein R_3, Q, Y and m are as defined for formula (I) under (1), and further reacting the resulting compound of formula



(XIX),

wherein R_3, Q, Y and m are as defined for formula (I) under (1) and R_1 and R_2 are halogen, analogously to Process (k).

The reactions described hereinabove and hereinbelow are carried out in a manner known *per se*, for example in the absence or, if necessary, in the presence of a suitable solvent or diluent or of a mixture thereof, the reactions being carried out, as required, with cooling, at room temperature or with heating, for example in a temperature range of approx-

imately from -80°C to the boiling temperature of the reaction mixture, preferably from approximately -20°C to approximately +150°C, and, if necessary, in a closed vessel, under pressure, under an inert gas atmosphere and/or under anhydrous conditions. Especially advantageous reaction conditions can be found in the Examples.

A leaving group, for example the leaving groups L_1 and L_2 defined above, or a counter-ion is to be understood hereinbefore and hereinbelow as being any removable group that customarily comes into consideration for chemical reactions, such as are known to the person skilled in the art; especially OH, halogens, such as fluorine, chlorine, bromine, iodine, -O-Si(C_1-C_8alkyl)$_3$, -O-aryl, -S-(C_1-C_8alkyl), -S-aryl, -O-S(=O)$_2$U, -S(=O)U or -S(=O)$_2$U, wherein U is unsubstituted or substituted C_1-C_8alkyl, C_2-C_8alkenyl, C_2-C_8alkynyl, unsubstituted or substituted aryl or unsubstituted or substituted benzyl. Especially preferred as leaving group are chlorine or bromine, mesylate, triflate, tosylate, especially chlorine; or chloride or bromide, especially chloride.

Process (a): The reaction is carried out in acetic acid or a halogenated hydrocarbon, such as dichloromethane, at temperatures of from –20°C to 100°C, preferably at from 20°C to 50°C. As oxidising agents there are used, for example, hydrogen peroxide, a peracid, such as peracetic acid, trifluoroperacetic acid, 3-chloroperbenzoic acid or a mixture thereof, such as sodium perborate in acetic acid.

Process (b): The reaction is preferably carried out in an alcohol, such as methanol, ethanol or an alcohol/water mixture, in the presence of an inorganic base, such as NaOH or KOH, and at temperatures of from 0°C to 150°C, preferably from 20°C to 80°C. Alternatively aminolysis with a primary amine, such as n-butylamine, can be carried out in a hydrocarbon, such as toluene or benzene, at temperatures of from 0°C to 150°C, preferably at from 20°C to 80°C.

Process (c): Depending upon the nature of the benzyl substituent to be removed, the reaction can be carried out, for example, under a hydrogen atmosphere, at a pressure of from 1 to 150 bar, especially at from 1 to 20 bar, and with the addition of a catalyst, such as palladium/carbon, in an alcohol or ether. The preferred reaction temperature is from 0°C to 120°C, especially from 20°C to 80°C.

Processes (d) and (g): The reaction is preferably carried out in the presence of a base, such as potassium or sodium carbonate, in acetone or dimethylformamide, at temperatures of from 0°C to 150°C, preferably from 20°C to 80°C. If necessary, catalytic amounts of

potassium iodide or sodium iodide, or phase transfer catalysts, such as crown ethers of quaternary ammonium salts, are added.

Process (e): The reaction is preferably carried out in acetone, dichloromethane, acetic acid, or especially in water, optionally with the addition of a mineral acid, at temperatures of from 0°C to 120°C, preferably at from 20°C to 50°C. For complete cleavage of the acetal it is preferable to add a strong mineral acid, for example hydrochloric acid, sulfuric acid or 4-toluenesulfonic acid.

Process (f): For the preparation of the difluoro-, dichloro-, dibromo-, chlorofluoro- and bromofluoro-vinyl compounds, reaction with CCl_4, CBr_4, CF_2X_2, CFX_3, $CF_2XC(=O)ONa$ or $CFX_2C(=O)ONa$ wherein X is bromine or chlorine is carried out in the presence of a trialkyl- or triaryl-phosphine, optionally with the addition of powdered zinc. The reaction is carried out in an inert solvent such as, for example, benzene or toluene, or an ether, such as diethyl ether, diisopropyl ether, dioxane or tetrahydrofuran, at temperatures of from 0°C to 150°C, preferably at from 20°C to 80°C.

For the preparation of the dichlorovinyl compounds it is also possible for the process to be carried out in dimethylformamide, benzene, toluene, or in an ether, at temperatures of from 0°C to 120°C, preferably from 20°C to 80°C, and in the presence of trichloroacetic acid/ sodium trichloroacetate, then by addition of acetic anhydride, optionally with the addition of base, for example triethylamine, and finally by addition of zinc and acetic acid.

Processes (h) and (k): The reaction is preferably carried out in an ether, dimethylformamide, dimethylacetamide or N-methylpyrrolidone, at temperatures of from 0°C to 150°C, preferably at from 20°C to 80°C, with the addition of a base, such as potassium or sodium carbonate. Alternatively a coupling reagent, for example azodicarboxylic acid diethyl or diisopropyl ester and triphenylphosphine, can be used.

Processes (i) and (l):

Where L_2 is a group Hal-C(=O)-, the process can be carried out in an inert solvent, such as in an ether or in toluene, at from 0°C to 80°C, and in the presence of a suitable base, for example a trialkylamine.

In the other cases the reaction is carried out in an ether, in an amide, such as dimethylformamide or N-methylpyrrolidone, and at from 0°C to 150°C. Sodium hydride, for example, can be used as base.

Compounds of formula (I) obtainable in accordance with the process or by other means can be converted into other compounds of formula (I) in a manner known *per se* by replacement of one or more substituents in the starting compound of formula (I) in customary manner by another (other) substituent(s) according to the invention.

In the case of such replacement, depending upon the choice of reaction conditions and starting materials suitable therefor, it is possible for only one substituent to be replaced by another substituent according to the invention in a reaction step or for a plurality of substituents to be replaced by other substituents according to the invention in the same reaction step.

Salts of compounds of formula (I) can be prepared in a manner known *per se*. For example, salts of compounds of formula (I) with bases are obtained by treatment of the free compounds with a suitable base or with a suitable ion exchange reagent.

Salts of compounds of formula (I) can be converted into the free compounds of formula (I) in customary manner, for example by treatment with a suitable acid or with a suitable ion exchange reagent.

Salts of compounds of formula (I) can be converted in a manner known *per se* into other salts of a compound of formula (I).

The compounds of formula (I), in free form or in salt form, may be in the form of one of the possible isomers or in the form of a mixture thereof, for example, depending on the number of asymmetric carbon atoms occurring in the molecule and their absolute and relative configuration, and/or depending on the configuration of non-aromatic double bonds occurring in the molecule, in the form of pure isomers, such as antipodes and/or diastereoisomers, or in the form of mixtures of isomers, such as mixtures of enantiomers, for example racemates, mixtures of diastereoisomers or mixtures of racemates. The invention relates both to the pure isomers and to all possible mixtures of isomers and is to be interpreted as such hereinbefore and hereinafter, even if stereochemical details are not mentioned specifically in every case.

Mixtures of diastereoisomers, mixtures of racemates and mixtures of double bond isomers of compounds of formula (I), in free form or in salt form, which may be obtained by the process according to the invention – depending upon the starting materials and procedures chosen – or by some other method, can be separated into the pure diastereoisomers or racemates in known manner on the basis of the physico-chemical differences

between the constituents, for example by means of fractional crystallisation, distillation and/or chromatography.

Mixtures of enantiomers, such as racemates, that are obtainable in a corresponding manner can be resolved into the enantiomers by known methods, for example by recrystallisation from an optically active solvent, by chromatography on chiral adsorbents, for example high pressure liquid chromatography (HPLC) on acetylcellulose, with the aid of suitable microorganisms, by cleavage with specific, immobilised enzymes, *via* the formation of inclusion compounds, for example using chiral crown ethers, only one enantiomer being complexed, or by conversion into diastereoisomeric salts and separation of the mixture of diastereoisomers so obtained, for example on the basis of their different solubilities by fractional crystallisation, into the diastereoisomers, from which the desired enantiomer can be freed by the action of suitable agents.

Apart from by separation of corresponding mixtures of isomers, pure diastereoisomers or enantiomers can be obtained according to the invention also by generally known methods of diastereoselective or enantioselective synthesis, for example by carrying out the process according to the invention using starting materials having correspondingly suitable stereochemistry.

In each case it is advantageous to isolate or synthesise the biologically more active isomer, e.g. enantiomer or diastereoisomer, or isomeric mixture, e.g. enantiomeric mixture or diastereoisomeric mixture, where the individual components have different biological activity.

The compounds of formula (I), in free form or salt form, can also be obtained in the form of their hydrates and/or may include other solvents, for example solvents which may have been used for the crystallisation of compounds in solid form.

The invention relates to all those embodiments of the process according to which a compound obtainable as starting material or intermediate at any stage of the process is used as starting material and some or all of the remaining steps are carried out or a starting material is used in the form of a derivative or salt and/or its racemates or antipodes or, especially, is formed under the reaction conditions.

In the process of the present invention it is preferable to use those starting materials and intermediates, in each case in free form or in salt form, which result in the compounds of formula (I) and their salts described at the beginning as being especially valuable.

The invention relates especially to the preparation processes described in Examples P1 to P4.

The invention relates also to the intermediates of formulae (II) to (XIX), where novel, and, where applicable, to their possible E/Z isomers, E/Z isomeric mixtures and/or tautomers, in each case in free form or in salt form. The preferences applying to such compounds are the same as those for the compounds of formula (I).

In the area of pest control, the compounds of formula (I) according to the invention are active ingredients exhibiting valuable preventive and/or curative activity with a very advantageous biocidal spectrum even at low rates of concentration, while being well tolerated by warm-blooded animals, fish and plants. The active ingredients according to the invention are effective against all or individual development stages of normally sensitive animal pests, but also of resistant animal pests, such as insects and members of the order Acarina. The insecticidal or acaricidal activity of the active ingredients according to the invention may manifest itself directly, i.e. in the mortality of the pests, which occurs immediately or only after some time, for example during moulting, or indirectly, for example in reduced oviposition and/or hatching rate, good activity corresponding to a mortality of at least 50 to 60 %.

The said animal pests include, for example, those mentioned in European Patent Application EP-A-736 252, page 5, line 55, to page 6, line 55. The pests mentioned therein are therefore included by reference in the subject matter of the present invention. The active ingredients according to the invention are especially suitable for controlling Boophilus microplus, Nilaparvata lugens and Tetranychus urticae, more especially for controlling those pests in crops of vegetables, fruit and rice.

The active ingredients according to the invention can be used to control, i.e. to inhibit or destroy, pests of the mentioned type occurring especially on plants, more especially on useful plants and ornamentals in agriculture, in horticulture and in forestry, or on parts of such plants, such as the fruits, blossoms, foliage, stems, tubers or roots, while in some cases parts of plants that grow later are still protected against those pests.

Target crops include especially cereals, such as wheat, barley, rye, oats, rice, maize and sorghum; beet, such as sugar beet and fodder beet; fruit, e.g. pomes, stone fruit and soft fruit, such as apples, pears, plums, peaches, almonds, cherries and berries, e.g. strawberries, raspberries and blackberries; leguminous plants, such as beans, lentils, peas and soybeans; oil plants, such as rape, mustard, poppy, olives, sunflowers, coconut, castor oil,

cocoa and groundnuts; cucurbitaceae, such as marrows, cucumbers and melons; fibre plants, such as cotton, flax, hemp and jute; citrus fruits, such as oranges, lemons, grapefruit and mandarins; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes and paprika; lauraceae, such as avocado, cinnamon and camphor; and tobacco, nuts, coffee, aubergines, sugar cane, tea, pepper, vines, hops, bananas, natural rubber plants and ornamentals.

Further areas of use of the active ingredients according to the invention are the protection of stored goods and storerooms and the protection of raw materials, and also in the hygiene sector, especially the protection of domestic animals and productive livestock against pests of the mentioned type

The invention therefore relates also to pesticidal compositions, such as emulsifiable concentrates, suspension concentrates, directly sprayable or dilutable solutions, spreadable pastes, dilute emulsions, wettable powders, soluble powders, dispersible powders, wettable powders, dusts, granules and encapsulations in polymer substances, that comprise at least one of the active ingredients according to the invention, the choice of formulation being made in accordance with the intended objectives and the prevailing circumstances.

The active ingredient is used in those compositions in pure form, a solid active ingredient, for example, being used in a specific particle size, or preferably together with at least one of the adjuvants customary in formulation technology, such as extenders, e.g. solvents or solid carriers, or surface-active compounds (surfactants).

As formulation adjuvants there are used, for example, solid carriers, solvents, stabilisers, "slow release" adjuvants, colourings and optionally surface-active substances (surfactants). Suitable carriers and adjuvants include all substances customarily used in crop protection products, especially products for the control of slugs and snails. As adjuvants, such as solvents, solid carriers, surface-active compounds, non-ionic surfactants, cationic surfactants, anionic surfactants and further adjuvants in the compositions used according to the invention, there come into consideration, for example, those described in EP-A-736 252; they are included by reference in the subject matter of the present invention.

The compositions generally comprise from 0.1 to 99 %, especially from 0.1 to 95 %, of active ingredient and from 1 to 99.9 %, especially from 5 to 99.9 %, of at least one solid or liquid adjuvant, the composition generally including from 0 to 25 %, especially from 0.1 to 20 %, of surfactants (% = % by weight in each case). Whereas commercial products will preferably be formulated as concentrates, the end user will normally employ dilute

formulations having considerably lower concentrations of active ingredient. Preferred compositions have especially the following compositions (% = percent by weight):

Emulsifiable concentrates:

active ingredient:	1 to 95 %, preferably 5 to 20 %
surfactant:	1 to 30 %, preferably 10 to 20 %
solvent:	5 to 98 %, preferably 70 to 85 %

Dusts:

active ingredient:	0.1 to 10 %, preferably 0.1 to 1 %
solid carrier:	99.9 to 90 %, preferably 99.9 to 99 %

Suspension concentrates:

active ingredient:	5 to 75 %, preferably 10 to 50 %
water:	94 to 24 %, preferably 88 to 30 %
surfactant:	1 to 40 %, preferably 2 to 30 %

Wettable powders:

active ingredient:	0.5 to 90 %, preferably 1 to 80 %
surfactant:	0.5 to 20 %, preferably 1 to 15 %
solid carrier:	5 to 99 %, preferably 15 to 98 %

Granules:

active ingredient:	0.5 to 30 %, preferably 3 to 15 %
solid carrier:	99.5 to 70 %, preferably 97 to 85 %

The action of the compounds according to the invention and the compositions comprising them against animal pests can be significantly broadened and adapted to the given circumstances by the addition of other insecticides, acaricides or nematicides. Suitable additives include, for example, members of the following classes of active ingredient: organophosphorus compounds, nitrophenols and derivatives, formamidines, ureas, carbamates, pyrethroids, chlorinated hydrocarbons, neonicotinoids and Bacillus thuringiensis preparations.

Examples of especially suitable mixing partners include: azamethiphos; chlorfenvinphos; cypermethrin, cypermethrin high-cis; cyromazine; diafenthiuron; diazinon; dichlorvos; dicrotophos; dicyclanil; fenoxycarb; fluazuron; furathiocarb; isazofos; iodfenphos; kinoprene;

lufenuron; methacriphos; methidathion; monocrotophos; phosphamidon; profenofos; diofenolan; a compound obtainable from the Bacillus thuringiensis strain GC91 or from the strain NCTC11821; pymetrozine; bromopropylate; methoprene; disulfoton; quinalphos; tau-fluvalinate; thiocyclam; thiometon; aldicarb; azinphos-methyl; benfuracarb; bifenthrin; buprofezin; carbofuran; dibutylaminothio; cartap; chlorfluazuron; chlorpyrifos; cyfluthrin; lambda-cyhalothrin; alpha-cypermethrin; zeta-cypermethrin; deltamethrin; diflubenzuron; endosulfan; ethiofencarb; fenitrothion; fenobucarb; fenvalerate; formothion; methiocarb; heptenophos; imidacloprid; isoprocarb; methamidophos; methomyl; mevinphos; parathion; parathion-methyl; phosalone; pirimicarb; propoxur; teflubenzuron; terbufos; triazamate; fenobucarb; tebufenozide; fipronil; beta-cyfluthrin; silafluofen; fenpyroximate; pyridaben; fenazaquin; pyriproxyfen; pyrimidifen; nitenpyram; acetamiprid; avermectin B_1 (abamectin); emamectin; emamectin benzoate; spinosad; a plant extract that is active against insects; a preparation that comprises nematodes and is active against insects; a preparation obtainable from Bacillus subtilis; a preparation that comprises fungi and is active against insects; a preparation that comprises viruses and is active against insects; chlorfenapyr; acephate; acrinathrin; alanycarb; alphamethrin; amitraz; AZ 60541; azinphos A; azinphos M; azocyclotin; bendiocarb; bensultap; betacyfluthrin; BPMC; brofenprox; bromophos A; bufencarb; butocarboxim; butylpyridaben; cadusafos; carbaryl; carbophenothion; chloethocarb; chlorethoxyfos; chlormephos; cis-resmethrin; clocythrin; clofentezine; cyanophos; cycloprothrin; cyhexatin; demeton M; demeton S; demeton-S-methyl; dichlofenthion; dicliphos; diethion; dimethoate; dimethylvinphos; dioxathion; edifenphos; esfenvalerate; ethion; ethofenprox; ethoprophos; etrimphos; fenamiphos; fenbutatin oxide; fenothiocarb; fenpropathrin; fenpyrad; fenthion; fluazinam; flucycloxuron; flucythrinate; flufenoxuron; flufenprox; fonophos; fosthiazate; fubfenprox; HCH; hexaflumuron; hexythiazox; IKI-220; iprobenfos; isofenphos; isoxathion; ivermectin; malathion; mecarbam; mesulfenphos; metaldehyde; metolcarb; milbemectin; moxidectin; naled; NC 184; omethoate; oxamyl; oxydemeton M; oxydeprofos; permethrin; phenthoate; phorate; phosmet; phoxim; pirimiphos M; pirimiphos E; promecarb; propaphos; prothiofos; prothoate; pyrachlo-phos; pyradaphenthion; pyresmethrin; pyrethrum; tebufenozide, salithion; sebufos; sulfotep; sulprofos; tebufenpyrad; tebupirimphos; tefluthrin; temephos; terbam; tetrachlorvinphos; thiacloprid; thiafenox; thiodicarb; thiofanox; thionazin; thuringiensin; tralomethrin; triarthene; triazophos; triazuron; trichlorfon; triflumuron; trimethacarb; vamidothion; xylylcarb; YI 5301/5302; zetamethrin; DPX-MP062 - indoxacarb; methoxyfenozide; bifenazate; XMC (3,5-

xylyl methylcarbamate); or the fungus pathogen Metarhizium anisopliae; more especially fipronil, thiamethoxam or lambda-cyhalothrin.

The compositions according to the invention may also comprise further solid or liquid adjuvants, such as stabilisers, e.g. vegetable oils or epoxidised vegetable oils (e.g. epoxidised coconut oil, rapeseed oil or soybean oil), antifoams, e.g. silicone oil, preservatives, viscosity regulators, binders and/or tackifiers as well as fertilisers or other active ingredients for obtaining special effects, e.g. acaricides, bactericides, fungicides, nematicides, molluscicides or selective herbicides.

The compositions according to the invention are prepared in known manner, in the absence of adjuvants, e.g. by grinding, sieving and/or compressing a solid active ingredient or mixture of active ingredients, for example to a certain particle size, and in the presence of at least one adjuvant, e.g. by intimately mixing and/or grinding the active ingredient or mixture of active ingredients with the adjuvant(s). The invention relates likewise to such processes for the preparation of the compositions according to the invention and to the use of the compounds of formula (I) in the preparation of such compositions.

The invention relates also to the methods of application of the compositions, i.e. the methods of controlling pests of the mentioned type, such as spraying, atomising, dusting, coating, dressing, scattering or pouring, which are selected in accordance with the intended objectives and the prevailing circumstances, and to the use of the compositions for controlling pests of the mentioned type. Typical rates of concentration are from 0.1 to 1000 ppm, preferably from 0.1 to 500 ppm, of active ingredient. The rates of application per hectare are generally from 1 to 2000 g of active ingredient per hectare, especially from 10 to 1000 g/ha, preferably from 20 to 600 g/ha.

A preferred method of application in the area of crop protection is application to the foliage of the plants (foliar application), the frequency and the rate of application being dependent upon the risk of infestation by the pest in question. However, the active ingredient can also penetrate the plants through the roots (systemic action) when the locus of the plants is impregnated with a liquid formulation or when the active ingredient is incorporated in solid form into the locus of the plants, for example into the soil, e.g. in granular form (soil application). In the case of paddy rice crops, such granules may be applied in metered amounts to the flooded rice field.

The compositions according to the invention are also suitable for protecting plant propagation material, including genetically modified propagation material, e.g. seed, such as

fruits, tubers or grains, or plant cuttings, against animal pests. The propagation material can be treated with the composition before planting: seed, for example, can be dressed before being sown. The active ingredients according to the invention can also be applied to grains (coating), either by impregnating the seeds in a liquid formulation or by coating them with a solid formulation. The composition can also be applied to the planting site when the propagation material is being planted, for example to the seed furrow during sowing. The invention relates also to such methods of treating plant propagation material and to the plant propagation material so treated.

The following Examples serve to illustrate the invention. They do not limit the invention. Temperatures are given in degrees Celsius; mixing ratios of solvents are given in parts by volume.

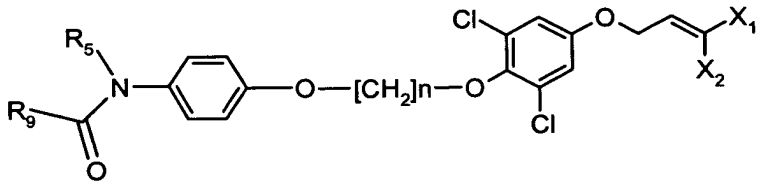
Preparation Examples

Example P1): Preparation of (4-{3-[2,6-dichloro-4-(3,3-dichloroallyloxy)-phenoxy]-propoxy}-phenyl)-carbamic acid tert-butyl ester

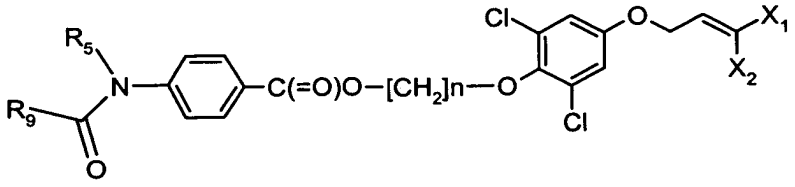
1.69 g of azadicarboxylic acid diisopropyl ester are added dropwise at 0-5°C to a solution of 1.97 g of triphenylphosphine in 60 ml of THF. After 30 minutes at 0-5°C, 2.5 g of 3-[2,6-dichloro-4-(3,3-dichloroallyloxy)-phenoxy]-propan-1-ol and 1.5 g of (4-hydroxy-phenyl)-carbamic acid tert-butyl ester dissolved in 30 ml of tetrahydrofuran are added dropwise. After being stirred for 24 hours at room temperature, the reaction mixture is concentrated and then purified over silica gel. (4-{3-[2,6-Dichloro-4-(3,3-dichloroallyloxy)-phenoxy]-propoxy}-phenyl)-carbamic acid tert-butyl ester (compound 1.6) is obtained.

Example P2): In a manner analogous to that described above it is also possible to prepare the further compounds of Tables 2 to 28 below.

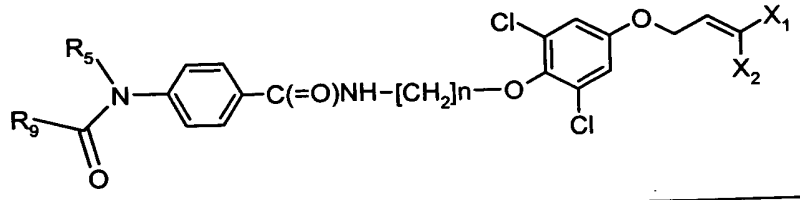
Table A: Compounds of formula



(Ia),



(Ib), and



(Ic)

No.	R_9	R_5
A.1	H	H
A.2	methoxy	H
A.3	ethoxy	H
A.4	propoxy	H
A.5	butoxy	H
A.6	pentyloxy	H
A.7	hexyloxy	H
A.8	isopropoxy	H
A.9	isobutoxy	H
A.10	isopentyloxy	H
A.11	tert-butoxy	H
A.12	2,2-dimethylpropoxy	H
A.13	vinyloxy	H
A.14	allyloxy	H
A.15	propargyloxy	H
A.16	propen-2-yloxy	H
A.17	benzyloxy	H
A.18	4-nitrobenzyloxy	H
A.19	methyl	H
A.20	ethyl	H
A.21	propyl	H
A.22	butyl	H
A.23	pentyl	H
A.24	hexyl	H
A.25	isopropyl	H
A.26	isobutyl	H
A.27	isopentyl	H
A.28	tert-butyl	H
A.29	2,2-dimethylpropyl	H
A.30	cyclopropyl	H
A.31	cyclobutyl	H
A.32	cyclopentyl	H
A.33	cyclohexyl	H
A.34	trifluoromethyl	H

No.	R_9	R_5
A.35	pentafluoroethyl	H
A.36	4-trifluoromethylphenyl	H
A.37	4-trifluoromethylbenzyl	H
A.38	2-chloro-(1-chloromethyl-1-methyl)-ethyl	H
A.39	2-chloro-1,1-dimethyl-ethyl	H
A.40	H	methyl
A.41	methoxy	methyl
A.42	ethoxy	methyl
A.43	propoxy	methyl
A.44	butoxy	methyl
A.45	pentyloxy	methyl
A.46	hexyloxy	methyl
A.47	isopropoxy	methyl
A.48	isobutoxy	methyl
A.49	isopentyloxy	methyl
A.50	tert-butoxy	methyl
A.51	2,2-dimethylpropoxy	methyl
A.52	vinyloxy	methyl
A.53	allyloxy	methyl
A.54	propargyloxy	methyl
A.55	propen-2-yloxy	methyl
A.56	benzyloxy	methyl
A.57	4-nitrobenzyloxy	methyl
A.58	methyl	methyl
A.59	ethyl	methyl
A.60	propyl	methyl
A.61	butyl	methyl
A.62	pentyl	methyl
A.63	hexyl	methyl
A.64	isopropyl	methyl
A.65	isobutyl	methyl
A.66	isopentyl	methyl
A.67	tert-butyl	methyl
A.68	2,2-dimethylpropyl	methyl
A.69	cyclopropyl	methyl
A.70	cyclobutyl	methyl
A.71	cyclopentyl	methyl
A.72	cyclohexyl	methyl
A.73	trifluoromethyl	methyl

No.	R_9	R_5
A.74	pentafluoroethyl	methyl
A.75	4-trifluoromethylphenyl	methyl
A.76	4-trifluoromethylbenzyl	methyl
A.77	2-chloro-(1-chloromethyl-1-methyl)-ethyl	methyl
A.78	2-chloro-1,1-dimethyl-ethyl	methyl
A.79	H	ethyl
A.80	methoxy	ethyl
A.81	ethoxy	ethyl
A.82	propoxy	ethyl
A.83	butoxy	ethyl
A.84	pentyloxy	ethyl
A.85	hexyloxy	ethyl
A.86	isopropoxy	ethyl
A.87	isobutoxy	ethyl
A.88	isopentyloxy	ethyl
A.89	tert-butoxy	ethyl
A.90	2,2-dimethylpropoxy	ethyl
A.91	vinyloxy	ethyl
A.92	allyloxy	ethyl
A.93	propargyloxy	ethyl
A.94	propen-2-yloxy	ethyl
A.95	benzyloxy	ethyl
A.96	4-nitrobenzyloxy	ethyl
A.97	methyl	ethyl
A.98	ethyl	ethyl
A.99	propyl	ethyl
A.100	butyl	ethyl
A.101	pentyl	ethyl
A.102	hexyl	ethyl
A.103	isopropyl	ethyl
A.104	isobutyl	ethyl
A.105	isopentyl	ethyl
A.106	tert-butyl	ethyl
A.107	2,2-dimethylpropyl	ethyl
A.108	cyclopropyl	ethyl
A.109	cyclobutyl	ethyl
A.110	cyclopentyl	ethyl
A.111	cyclohexyl	ethyl
A.112	trifluoromethyl	ethyl

No.	R_9	R_5
A.113	pentafluoroethyl	ethyl
A.114	4-trifluoromethylphenyl	ethyl
A.115	4-trifluoromethylbenzyl	ethyl
A.116	2-chloro-(1-chloromethyl-1-methyl)-ethyl	ethyl
A.117	2-chloro-1,1-dimethyl-ethyl	ethyl
A.118	H	propyl
A.119	methoxy	propyl
A.120	ethoxy	propyl
A.121	propoxy	propyl
A.122	butoxy	propyl
A.123	pentyloxy	propyl
A.124	hexyloxy	propyl
A.125	isopropoxy	propyl
A.126	isobutoxy	propyl
A.127	isopentyloxy	propyl
A.128	tert-butoxy	propyl
A.129	2,2-dimethylpropoxy	propyl
A.130	vinyloxy	propyl
A.131	allyloxy	propyl
A.132	propargyloxy	propyl
A.133	propen-2-yloxy	propyl
A.134	benzyloxy	propyl
A.135	4-nitrobenzyloxy	propyl
A.136	methyl	propyl
A.137	ethyl	propyl
A.138	propyl	propyl
A.139	butyl	propyl
A.140	pentyl	propyl
A.141	hexyl	propyl
A.142	isopropyl	propyl
A.143	isobutyl	propyl
A.144	isopentyl	propyl
A.145	tert-butyl	propyl
A.146	2,2-dimethylpropyl	propyl
A.147	cyclopropyl	propyl
A.148	cyclobutyl	propyl
A.149	cyclopentyl	propyl
A.150	cyclohexyl	propyl
A.151	trifluoromethyl	propyl

No.	R_9	R_5
A.152	pentafluoroethyl	propyl
A.153	4-trifluoromethylphenyl	propyl
A.154	4-trifluoromethylbenzyl	propyl
A.155	2-chloro-(1-chloromethyl-1-methyl)-ethyl	propyl
A.156	2-chloro-1,1-dimethyl-ethyl	propyl
A.157	H	allyl
A.158	methoxy	allyl
A.159	ethoxy	allyl
A.160	propoxy	allyl
A.161	butoxy	allyl
A.162	pentyloxy	allyl
A.163	hexyloxy	allyl
A.164	isopropoxy	allyl
A.165	isobutoxy	allyl
A.166	isopentyloxy	allyl
A.167	tert-butoxy	allyl
A.168	2,2-dimethylpropoxy	allyl
A.169	vinyloxy	allyl
A.170	allyloxy	allyl
A.171	propargyloxy	allyl
A.172	propen-2-yloxy	allyl
A.173	benzyloxy	allyl
A.174	4-nitrobenzyloxy	allyl
A.175	methyl	allyl
A.176	ethyl	allyl
A.177	propyl	allyl
A.178	butyl	allyl
A.179	pentyl	allyl
A.180	hexyl	allyl
A.181	isopropyl	allyl
A.182	isobutyl	allyl
A.183	isopentyl	allyl
A.184	tert-butyl	allyl
A.185	2,2-dimethylpropyl	allyl
A.186	cyclopropyl	allyl
A.187	cyclobutyl	allyl
A.188	cyclopentyl	allyl
A.189	cyclohexyl	allyl
A.190	trifluoromethyl	allyl

No.	R_9	R_5
A.191	pentafluoroethyl	allyl
A.192	4-trifluoromethylphenyl	allyl
A.193	4-trifluoromethylbenzyl	allyl
A.194	2-chloro-(1-chloromethyl-1-methyl)-ethyl	allyl
A.195	2-chloro-1,1-dimethyl-ethyl	allyl
A.196	H	propargyl
A.197	methoxy	propargyl
A.198	ethoxy	propargyl
A.199	propoxy	propargyl
A.200	butoxy	propargyl
A.201	pentyloxy	propargyl
A.202	hexyloxy	propargyl
A.203	isopropoxy	propargyl
A.204	isobutoxy	propargyl
A.205	isopentyloxy	propargyl
A.206	tert-butoxy	propargyl
A.207	2,2-dimethylpropoxy	propargyl
A.208	vinyloxy	propargyl
A.209	allyloxy	propargyl
A.210	propargyloxy	propargyl
A.211	propen-2-yloxy	propargyl
A.212	benzyloxy	propargyl
A.213	4-nitrobenzyloxy	propargyl
A.214	methyl	propargyl
A.215	ethyl	propargyl
A.216	propyl	propargyl
A.217	butyl	propargyl
A.218	pentyl	propargyl
A.219	hexyl	propargyl
A.220	isopropyl	propargyl
A.221	isobutyl	propargyl
A.222	isopentyl	propargyl
A.223	tert-butyl	propargyl
A.224	2,2-dimethylpropyl	propargyl
A.225	cyclopropyl	propargyl
A.226	cyclobutyl	propargyl
A.227	cyclopentyl	propargyl
A.228	cyclohexyl	propargyl
A.229	trifluoromethyl	propargyl

No.	R_9	R_5
A.230	pentafluoroethyl	propargyl
A.231	4-trifluoromethylphenyl	propargyl
A.232	4-trifluoromethylbenzyl	propargyl
A.233	2-chloro-(1-chloromethyl-1-methyl)-ethyl	propargyl
A.234	2-chloro-1,1-dimethyl-ethyl	propargyl
A.235	H	methoxy
A.236	methoxy	methoxy
A.237	ethoxy	methoxy
A.238	propoxy	methoxy
A.239	butoxy	methoxy
A.240	pentyloxy	methoxy
A.241	hexyloxy	methoxy
A.242	isopropoxy	methoxy
A.243	isobutoxy	methoxy
A.244	isopentyloxy	methoxy
A.245	tert-butoxy	methoxy
A.246	2,2-dimethylpropoxy	methoxy
A.247	vinyloxy	methoxy
A.248	allyloxy	methoxy
A.249	propargyloxy	methoxy
A.250	propen-2-yloxy	methoxy
A.251	benzyloxy	methoxy
A.252	4-nitrobenzyloxy	methoxy
A.253	methyl	methoxy
A.254	ethyl	methoxy
A.255	propyl	methoxy
A.256	butyl	methoxy
A.257	pentyl	methoxy
A.258	hexyl	methoxy
A.259	isopropyl	methoxy
A.260	isobutyl	methoxy
A.261	isopentyl	methoxy
A.262	tert-butyl	methoxy
A.263	2,2-dimethylpropyl	methoxy
A.264	cyclopropyl	methoxy
A.265	cyclobutyl	methoxy
A.266	cyclopentyl	methoxy
A.267	cyclohexyl	methoxy
A.268	trifluoromethyl	methoxy

No.	R_9	R_5
A.269	pentafluoroethyl	methoxy
A.270	4-trifluoromethylphenyl	methoxy
A.271	4-trifluoromethylbenzyl	methoxy
A.272	2-chloro-(1-chloromethyl-1-methyl)-ethyl	methoxy
A.273	2-chloro-1,1-dimethyl-ethyl	methoxy
A.274	H	ethoxy
A.275	methoxy	ethoxy
A.276	ethoxy	ethoxy
A.277	propoxy	ethoxy
A.278	butoxy	ethoxy
A.279	pentyloxy	ethoxy
A.280	hexyloxy	ethoxy
A.281	isopropoxy	ethoxy
A.282	isobutoxy	ethoxy
A.283	isopentyloxy	ethoxy
A.284	tert-butoxy	ethoxy
A.285	2,2-dimethylpropoxy	ethoxy
A.286	vinyloxy	ethoxy
A.287	allyloxy	ethoxy
A.288	propargyloxy	ethoxy
A.289	propen-2-yloxy	ethoxy
A.290	benzyloxy	ethoxy
A.291	4-nitrobenzyloxy	ethoxy
A.292	methyl	ethoxy
A.293	ethyl	ethoxy
A.294	propyl	ethoxy
A.295	butyl	ethoxy
A.296	pentyl	ethoxy
A.297	hexyl	ethoxy
A.298	isopropyl	ethoxy
A.299	isobutyl	ethoxy
A.300	isopentyl	ethoxy
A.301	tert-butyl	ethoxy
A.302	2,2-dimethylpropyl	ethoxy
A.303	cyclopropyl	ethoxy
A.304	cyclobutyl	ethoxy
A.305	cyclopentyl	ethoxy
A.306	cyclohexyl	ethoxy
A.307	trifluoromethyl	ethoxy

No.	R_9	R_5
A.308	pentafluoroethyl	ethoxy
A.309	4-trifluoromethylphenyl	ethoxy
A.310	4-trifluoromethylbenzyl	ethoxy
A.311	2-chloro-(1-chloromethyl-1-methyl)-ethyl	ethoxy
A.312	2-chloro-1,1-dimethyl-ethyl	ethoxy
A.313	H	methylcarbonyl
A.314	methoxy	methylcarbonyl
A.315	ethoxy	methylcarbonyl
A.316	propoxy	methylcarbonyl
A.317	butoxy	methylcarbonyl
A.318	pentyloxy	methylcarbonyl
A.319	hexyloxy	methylcarbonyl
A.320	isopropoxy	methylcarbonyl
A.321	isobutoxy	methylcarbonyl
A.322	isopentyloxy	methylcarbonyl
A.323	tert-butoxy	methylcarbonyl
A.324	2,2-dimethylpropoxy	methylcarbonyl
A.325	vinyloxy	methylcarbonyl
A.326	allyloxy	methylcarbonyl
A.327	propargyloxy	methylcarbonyl
A.328	propen-2-yloxy	methylcarbonyl
A.329	benzyloxy	methylcarbonyl
A.330	4-nitrobenzyloxy	methylcarbonyl
A.331	methyl	methylcarbonyl
A.332	ethyl	methylcarbonyl
A.333	propyl	methylcarbonyl
A.334	butyl	methylcarbonyl
A.335	pentyl	methylcarbonyl
A.336	hexyl	methylcarbonyl
A.337	isopropyl	methylcarbonyl
A.338	isobutyl	methylcarbonyl
A.339	isopentyl	methylcarbonyl
A.340	tert-butyl	methylcarbonyl
A.341	2,2-dimethylpropyl	methylcarbonyl
A.342	cyclopropyl	methylcarbonyl
A.343	cyclobutyl	methylcarbonyl
A.344	cyclopentyl	methylcarbonyl
A.345	cyclohexyl	methylcarbonyl
A.346	trifluoromethyl	methylcarbonyl

No.	R_9	R_5
A.347	pentafluoroethyl	methylcarbonyl
A.348	4-trifluoromethylphenyl	methylcarbonyl
A.349	4-trifluoromethylbenzyl	methylcarbonyl
A.350	2-chloro-(1-chloromethyl-1-methyl)-ethyl	methylcarbonyl
A.351	2-chloro-1,1-dimethyl-ethyl	methylcarbonyl
A.352	H	ethylcarbonyl
A.353	methoxy	ethylcarbonyl
A.354	ethoxy	ethylcarbonyl
A.355	propoxy	ethylcarbonyl
A.356	butoxy	ethylcarbonyl
A.357	pentyloxy	ethylcarbonyl
A.358	hexyloxy	ethylcarbonyl
A.359	isopropoxy	ethylcarbonyl
A.360	isobutoxy	ethylcarbonyl
A.361	isopentyloxy	ethylcarbonyl
A.362	tert-butoxy	ethylcarbonyl
A.363	2,2-dimethylpropoxy	ethylcarbonyl
A.364	vinyloxy	ethylcarbonyl
A.365	allyloxy	ethylcarbonyl
A.366	propargyloxy	ethylcarbonyl
A.367	propen-2-yloxy	ethylcarbonyl
A.368	benzyloxy	ethylcarbonyl
A.369	4-nitrobenzyloxy	ethylcarbonyl
A.370	methyl	ethylcarbonyl
A.371	ethyl	ethylcarbonyl
A.372	propyl	ethylcarbonyl
A.373	butyl	ethylcarbonyl
A.374	pentyl	ethylcarbonyl
A.375	hexyl	ethylcarbonyl
A.376	isopropyl	ethylcarbonyl
A.377	isobutyl	ethylcarbonyl
A.378	isopentyl	ethylcarbonyl
A.379	tert-butyl	ethylcarbonyl
A.380	2,2-dimethylpropyl	ethylcarbonyl
A.381	cyclopropyl	ethylcarbonyl
A.382	cyclobutyl	ethylcarbonyl
A.383	cyclopentyl	ethylcarbonyl
A.384	cyclohexyl	ethylcarbonyl
A.385	trifluoromethyl	ethylcarbonyl

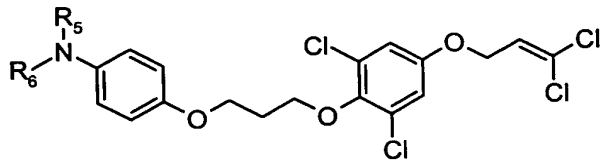
No.	R_9	R_5
A.386	pentafluoroethyl	ethylcarbonyl
A.387	4-trifluoromethylphenyl	ethylcarbonyl
A.388	4-trifluoromethylbenzyl	ethylcarbonyl
A.389	2-chloro-(1-chloromethyl-1-methyl)-ethyl	ethylcarbonyl
A.390	2-chloro-1,1-dimethyl-ethyl	ethylcarbonyl
A.391	H	cyclopropylcarbonyl
A.392	methoxy	cyclopropylcarbonyl
A.393	ethoxy	cyclopropylcarbonyl
A.394	propoxy	cyclopropylcarbonyl
A.395	butoxy	cyclopropylcarbonyl
A.396	pentyloxy	cyclopropylcarbonyl
A.397	hexyloxy	cyclopropylcarbonyl
A.398	isopropoxy	cyclopropylcarbonyl
A.399	isobutoxy	cyclopropylcarbonyl
A.400	isopentyloxy	cyclopropylcarbonyl
A.401	tert-butoxy	cyclopropylcarbonyl
A.402	2,2-dimethylpropoxy	cyclopropylcarbonyl
A.403	vinyloxy	cyclopropylcarbonyl
A.404	allyloxy	cyclopropylcarbonyl
A.405	propargyloxy	cyclopropylcarbonyl
A.406	propen-2-yloxy	cyclopropylcarbonyl
A.407	benzyloxy	cyclopropylcarbonyl
A.408	4-nitrobenzyloxy	cyclopropylcarbonyl
A.409	methyl	cyclopropylcarbonyl
A.410	ethyl	cyclopropylcarbonyl
A.411	propyl	cyclopropylcarbonyl
A.412	butyl	cyclopropylcarbonyl
A.413	pentyl	cyclopropylcarbonyl
A.414	hexyl	cyclopropylcarbonyl
A.415	isopropyl	cyclopropylcarbonyl
A.416	isobutyl	cyclopropylcarbonyl
A.417	isopentyl	cyclopropylcarbonyl
A.418	tert-butyl	cyclopropylcarbonyl
A.419	2,2-dimethylpropyl	cyclopropylcarbonyl
A.420	cyclopropyl	cyclopropylcarbonyl
A.421	cyclobutyl	cyclopropylcarbonyl
A.422	cyclopentyl	cyclopropylcarbonyl
A.423	cyclohexyl	cyclopropylcarbonyl
A.424	trifluoromethyl	cyclopropylcarbonyl

No.	R_9	R_5
A.425	pentafluoroethyl	cyclopropylcarbonyl
A.426	4-trifluoromethylphenyl	cyclopropylcarbonyl
A.427	4-trifluoromethylbenzyl	cyclopropylcarbonyl
A.428	2-chloro-(1-chloromethyl-1-methyl)-ethyl	cyclopropylcarbonyl
A.429	2-chloro-1,1-dimethyl-ethyl	cyclopropylcarbonyl
A.430	H	methoxycarbonyl
A.431	methoxy	methoxycarbonyl
A.432	ethoxy	methoxycarbonyl
A.433	propoxy	methoxycarbonyl
A.434	butoxy	methoxycarbonyl
A.435	pentyloxy	methoxycarbonyl
A.436	hexyloxy	methoxycarbonyl
A.437	isopropoxy	methoxycarbonyl
A.438	isobutoxy	methoxycarbonyl
A.439	isopentyloxy	methoxycarbonyl
A.440	tert-butoxy	methoxycarbonyl
A.441	2,2-dimethylpropoxy	methoxycarbonyl
A.442	vinyloxy	methoxycarbonyl
A.443	allyloxy	methoxycarbonyl
A.444	propargyloxy	methoxycarbonyl
A.445	propen-2-yloxy	methoxycarbonyl
A.446	benzyloxy	methoxycarbonyl
A.447	4-nitrobenzyloxy	methoxycarbonyl
A.448	methyl	methoxycarbonyl
A.449	ethyl	methoxycarbonyl
A.450	propyl	methoxycarbonyl
A.451	butyl	methoxycarbonyl
A.452	pentyl	methoxycarbonyl
A.453	hexyl	methoxycarbonyl
A.454	isopropyl	methoxycarbonyl
A.455	isobutyl	methoxycarbonyl
A.456	isopentyl	methoxycarbonyl
A.457	tert-butyl	methoxycarbonyl
A.458	2,2-dimethylpropyl	methoxycarbonyl
A.459	cyclopropyl	methoxycarbonyl
A.460	cyclobutyl	methoxycarbonyl
A.461	cyclopentyl	methoxycarbonyl
A.462	cyclohexyl	methoxycarbonyl
A.463	trifluoromethyl	methoxycarbonyl

No.	R_9	R_5
A.464	pentafluoroethyl	methoxycarbonyl
A.465	4-trifluoromethylphenyl	methoxycarbonyl
A.466	4-trifluoromethylbenzyl	methoxycarbonyl
A.467	2-chloro-(1-chloromethyl-1-methyl)-ethyl	methoxycarbonyl
A.468	2-chloro-1,1-dimethyl-ethyl	methoxycarbonyl
A.469	H	ethoxycarbonyl
A.470	methoxy	ethoxycarbonyl
A.471	ethoxy	ethoxycarbonyl
A.472	propoxy	ethoxycarbonyl
A.473	butoxy	ethoxycarbonyl
A.474	pentyloxy	ethoxycarbonyl
A.475	hexyloxy	ethoxycarbonyl
A.476	isopropoxy	ethoxycarbonyl
A.477	isobutoxy	ethoxycarbonyl
A.478	isopentyloxy	ethoxycarbonyl
A.479	tert-butoxy	ethoxycarbonyl
A.480	2,2-dimethylpropoxy	ethoxycarbonyl
A.481	vinyloxy	ethoxycarbonyl
A.482	allyloxy	ethoxycarbonyl
A.483	propargyloxy	ethoxycarbonyl
A.484	propen-2-yloxy	ethoxycarbonyl
A.485	benzyloxy	ethoxycarbonyl
A.486	4-nitrobenzyloxy	ethoxycarbonyl
A.487	methyl	ethoxycarbonyl
A.488	ethyl	ethoxycarbonyl
A.489	propyl	ethoxycarbonyl
A.490	butyl	ethoxycarbonyl
A.491	pentyl	ethoxycarbonyl
A.492	hexyl	ethoxycarbonyl
A.493	isopropyl	ethoxycarbonyl
A.494	isobutyl	ethoxycarbonyl
A.495	isopentyl	ethoxycarbonyl
A.496	tert-butyl	ethoxycarbonyl
A.497	2,2-dimethylpropyl	ethoxycarbonyl
A.498	cyclopropyl	ethoxycarbonyl
A.499	cyclobutyl	ethoxycarbonyl
A.500	cyclopentyl	ethoxycarbonyl
A.501	cyclohexyl	ethoxycarbonyl
A.502	trifluoromethyl	ethoxycarbonyl

No.	R_9	R_5
A.503	pentafluoroethyl	ethoxycarbonyl
A.504	4-trifluoromethylphenyl	ethoxycarbonyl
A.505	4-trifluoromethylbenzyl	ethoxycarbonyl
A.506	2-chloro-(1-chloromethyl-1-methyl)-ethyl	ethoxycarbonyl
A.507	2-chloro-1,1-dimethyl-ethyl	ethoxycarbonyl

Table 1: Compounds of formula



No.	R_5	R_6	^{1}H-NMR ($CDCl_3$) 300MHz
1.1	H	H	2.26 (m,2H), 3.40 (s,NH_2), 4.10-4.22 (m,6H), 4.59 (d,2H), 6.12 (t,1H), 6.63 (d,2H), 6.78 (d,2H), 6.82 (s,2H)
1.2	methyl	methyl	2.26 (m,2H), 2.88 (s,6H) 4.10-4.22 (m,4H), 4.58 (d,2H), 6.10 (t,1H), 6.74 (d,2H), 6.82 (s,2H), 6.88 (d,2H)
1.3	methoxycarbonyl	H	2.28 (m,2H), 3.76 (s,3H), 4.13 (t,2H), 4.22 (t,2H), 4.58 (d,2H), 6.10 (t,1H), 6.50 (s,NH), 6.82 (s,2H), 6.88 (d,2H), 7.28 (d,2H)
1.4	ethoxycarbonyl	H	1.31 (t,3H), 2.28 (m,2H), 4.17 (t,2H), 4.20-4.30 (t,2H+q,2H), 4.58 (d,2H), 6.12 (t,1H), 6.47 (s,NH), 6.85 (s,2H), 6.88 (d,2H), 7.28 (d,2H)
1.5	isopropoxycarbonyl	H	1.30 (d,6H), 2.28 (m,2H), 4.15 (t,2H), 4.23 (t,2H), 4.58 (d,2H), 5.02 (m,1H), 6.11 (t,1H), 6.40 (s,NH), 6.85 (s,2H), 6.89 (d,2H), 7.28 (d,2H)
1.6	tert-butyloxy-carbonyl	H	1.50 (s,9H), 2.28 (m,2H), 4.13 (t,2H), 4.21 (t,2H), 4.58 (d,2H), 6.12 (t,1H), 6.37 (s,NH), 6.82 (s,2H), 6.88 (d,2H), 7.28 (d,2H)
1.7	2,2-dimethyl-propyloxycarbonyl	H	0.98 (s,9H), 2.29 (m,2H), 3.38 (s,2H), 4.16 (t,2H), 4.23 (t,2H), 4.58 (d,2H), 6.11 (t,1H), 6.50 (s,NH), 6.82 (s,2H), 6.89 (d,2H), 7.28 (d,2H)
1.8	vinyloxycarbonyl	H	2.29 (m,2H), 4.17 (t,2H), 4.24 (t,2H), 4.52 (d,1H), 4.58 (d,2H) 4.83 (d,1H), 6.12 (t,1H), 6.63 (s,NH), 6.86 (s,2H), 6.92 (d,2H), 7.25-7.37 (m,2H+1H)

No.	R_5	R_6	^{1}H-NMR ($CDCl_3$) 300MHz
1.9	allyloxycarbonyl	H	2.29 (m,2H), 4.17 (t,2H), 4.23 (t,2H), 4.59 (d,2H) 4.66 (d,2H), 5.27 (d,1H), 5.37 (d,1H) 5.9-6.09 (m,1H), 6.12 (t,1H), 6.51 (s,NH), 6.85 (s,2H), 6.90 (d,2H), 7.29 (d,2H)
1.10	propargyloxy-carbonyl	H	2.28 (m,2H), 2.51 (s,1H), 4.15 (t,2H), 4.25 (t,2H), 4.60 (d,2H), 4.80 (s,2H), 6.11 (t,1H), 6.63 (s,NH), 6.88 (s,2H), 6.90 (d,2H), 7.30 (d,2H)
1.11	propen-2-yloxy-carbonyl	H	2.00 (s,3H), 2.29 (m,2H), 4.17 (t,2H), 4.23 (t,2H), 4.52 (dd,1H), 4.49 (d,2H) 4.72 (s,1H), 4.80 (s,1H) 6.12 (t,1H), 6.60 (s,NH), 6.83 (s,2H), 6.91 (d,2H), 7.32 (d,2H)
1.12	benzyloxycarbonyl	H	2.28 (m,2H), 4.17 (t,2H), 4.25 (t,2H), 4.60 (d,2H), 5.19 (s,2H), 6.12 (t,1H), 6.54 (s,NH), 6.83 (s,2H), 6.90 (d,2H), 7.28-7.45 (m,7H)
1.13	4-nitrobenzyloxy-carbonyl	H	2.28 (m,2H), 4.13 (t,2H), 4.23 (t,2H), 4.59 (d,2H), 5.30 (s, 2H), 6.12 (t,1H), 6.62 (s,NH), 6.83 (s,2H), 6.90 (d,2H), 7.39 (d,2H), 7.57 (d,2H), 8.23 (d,2H)
1.14	methylcarbonyl	H	2.18 (s,3H), 2.29 (m,2H), 4.13 (t,2H), 4.23 (t,2H), 4.58 (d,2H), 6.12 (t,1H), 6.83 (s,2H), 6.90 (d,2H), 7.03 (s,NH), 7.40 (d,2H)
1.15	4-trifluoromethyl-carbonyl		2.39 (m,2H), 4.17 (t,2H), 4.28 (t,2H), 4.58 (d,2H), 6.12 (t,1H), 6.83 (s,2H), 6.94 (d,2H), 7.47 (d,2H), 7.79 (s,NH)
1.16	4-trifluoromethyl-phenyl-carbonyl	H	2.29 (m,2H), 4.16 (t,2H), 4.28 (t,2H), 4.58 (d,2H), 6.11 (t,1H), 6.83 (s,2H), 6.93 (d,2H), 7.53 (d,2H), 7.72 (d,2H), 7.88 (s,NH), 7.98 (d,2H)
1.17	4-trifluoromethyl-benzyl-carbonyl	H	2.25 (m,2H), 3.77 (s,2H), 4.13 (t,2H), 4.21 (t,2H), 4.58 (d,2H), 6.11 (t,1H), 6.82 (s,2H), 6.87 (d,2H), 7.18 (s, NH), 7.33 (d,2H), 7.48 (d,2H), 7.63 (d,2H)
1.18	2-chloro-1,1-di-methyl-ethyl-carbonyl	H	1.40 (s,6H), 2.29 (m,2H), 3.70 (s,2H), 4.13 (t,2H), 4.23 (t,2H), 4.57 (d,2H), 6.10 (t,1H), 6.82 (s,2H), 6.90 (d,2H), 7.37-7.45 (d,2H+s,NH)

Table 2: Compounds of general formula (Ia) wherein X_1 and X_2 are fluorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 3: Compounds of general formula (Ib) wherein X_1 and X_2 are fluorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 4: Compounds of general formula (Ic) wherein X_1 and X_2 are fluorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 5: Compounds of general formula (Ia) wherein X_1 and X_2 are fluorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 6: Compounds of general formula (Ib) wherein X_1 and X_2 are fluorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 7: Compounds of general formula (Ic) wherein X_1 and X_2 are fluorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 8: Compounds of general formula (Ia) wherein X_1 and X_2 are fluorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 9: Compounds of general formula (Ib) wherein X_1 and X_2 are fluorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 10: Compounds of general formula (Ic) wherein X_1 and X_2 are fluorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 11: Compounds of general formula (Ia) wherein X_1 and X_2 are chlorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 12: Compounds of general formula (Ib) wherein X_1 and X_2 are chlorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 13: Compounds of general formula (Ic) wherein X_1 and X_2 are chlorine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 14: Compounds of general formula (Ia) wherein X_1 and X_2 are chlorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 15: Compounds of general formula (Ib) wherein X_1 and X_2 are chlorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 16: Compounds of general formula (Ic) wherein X_1 and X_2 are chlorine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 17: Compounds of general formula (Ia) wherein X_1 and X_2 are chlorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 18: Compounds of general formula (Ib) wherein X_1 and X_2 are chlorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 19: Compounds of general formula (Ic) wherein X_1 and X_2 are chlorine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 20: Compounds of general formula (Ia) wherein X_1 and X_2 are bromine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 21: Compounds of general formula (Ib) wherein X_1 and X_2 are bromine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 22: Compounds of general formula (Ic) wherein X_1 and X_2 are bromine and n is 2, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 23: Compounds of general formula (Ia) wherein X_1 and X_2 are bromine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 24: Compounds of general formula (Ib) wherein X_1 and X_2 are bromine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 25: Compounds of general formula (Ic) wherein X_1 and X_2 are bromine and n is 3, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 26: Compounds of general formula (Ia) wherein X_1 and X_2 are bromine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Table 27: Compounds of general formula (Ib) wherein X_1 and X_2 are bromine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

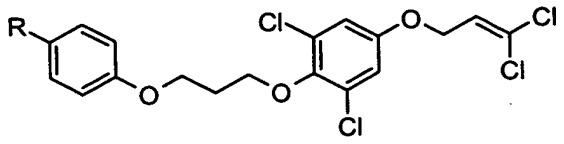
Table 28: Compounds of general formula (Ic) wherein X_1 and X_2 are bromine and n is 4, and the combination of substituents R_5 and R_9 for each compound corresponds to a line A.1 to A.507 of Table A.

Preparation Example P3): Preparation of 3-(4-{3-[2,6-dichloro-4-(3,3-dichloroallyloxy)-phenoxy]-propoxy}-phenyl)-oxazolidin-2-one

7 mg of copper(I) iodide, 2 mg of ethylenediamine and 155 mg of tripotassium phosphate are added, under argon, to a solution of 200 mg of 1,3-dichloro-5-(3,3-dichloro-allyloxy)-2-[3-(4-iodophenoxy)-propoxy]-benzene and 38 mg of 2-oxazolidinone in 4 ml of dioxane. After 17 hours at 110°C the reaction mixture is filtered and concentrated. Purification over silica gel yields the title compound (compound 29.3).

Example P4: In a manner analogous to that described above it is also possible to prepare the further compounds of Tables 29 to 56 below.

Table 29: Compounds of formula



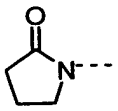
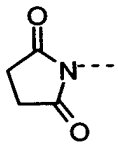
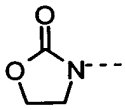
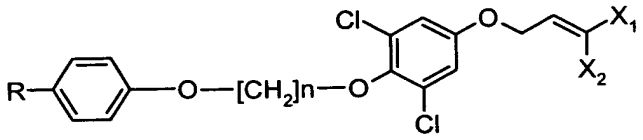
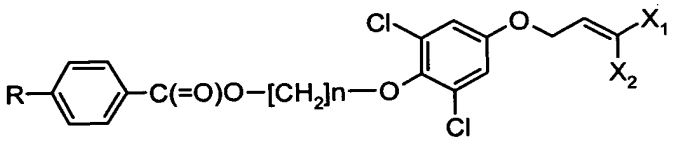
No.	R	^{1}H-NMR ($CDCl_3$) 300MHz
29.1		2.13 (m,2H), 2.28 (m,2H), 2.59 (t,2H), 3.82 (t,2H), 4.14 (t,2H), 4.25 (t,2H), 4.58 (d,2H), 6.11 (t,1H), 6.82 (s,2H), 6.92 (d,2H), 7.50 (d,2H)
29.2		2.29 (m,2H), 2.89 (s,4H), 4.13 (t,2H), 4.28 (t,2H), 4.58 (d,2H), 6.10 (t,1H), 6.82 (s,2H), 7.01 (d,2H), 7.18 (d,2H)
29.3		2.29 (m,2H), 4.02 (t,2H), 4.15 (t,2H), 4.25 (t,2H), 4.47 (t,2H), 4.58 (d,2H), 6.11 (t,1H), 6.82 (s,2H), 6.93 (d,2H), 7.43 (d,2H)

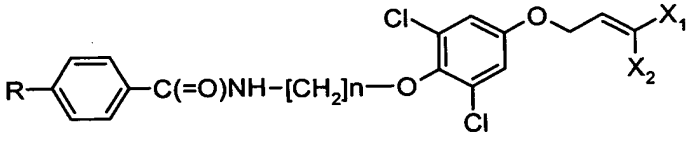
Table B: Compounds of formulae



(Id)



(Ie), and



(If)

No.	R
B.1	3-(oxazolidin)-yl-2-one
B.2	3-(4-methyl-oxazolidin)-yl-2-one
B.3	3-(4-ethyl-oxazolidin)-yl-2-one
B.4	3-(4-propyl-oxazolidin)-yl-2-one
B.5	3-(4,4-dimethyl-oxazolidin)-yl-2-one

No.	R
B.6	3-(4,4-diethyl-oxazolidin)-yl-2-one
B.7	3-(5-methyl-oxazolidin)-yl-2-one
B.8	3-(5-ethyl-oxazolidin)-yl-2-one
B.9	3-(5-propyl-oxazolidin)-yl-2-one
B.10	3-(5-cyclopropyl-oxazolidinone
B.11	3-(5-isopropyl-oxazolidin)-yl-2-one
B.12	3-(5-isobutyl-oxazolidin)-yl-2-one
B.13	3-(5-allyl-oxazolidin)-yl-2-one
B.14	3-(5-methoxymethyl-oxazolidin)-yl-2-one
B.15	3-(5-ethoxymethyl-oxazolidin)-yl-2-one
B.16	3-(5-propoxymethyl-oxazolidin)-yl-2-one
B.17	3-(5-cyclopropoxymethyl-oxazolidin)-yl-2-one
B.18	3-(5-isopropoxymethyl-oxazolidin)-yl-2-one
B.19	3-(5-isobutoxymethyl-oxazolidin)-yl-2-one
B.20	3-(5-allyloxymethyl-oxazolidin)-yl-2-one
B.21	3-(5-propargyloxymethyl-oxazolidin)-yl-2-one
B.22	3-(5,5-dimethyl-oxazolidin)-yl-2-one
B.23	3-(5,5-diethyl-oxazolidin)-yl-2-one
B.24	1-(pyrrolidin)-yl-2-one
B.25	1-(3-methyl-pyrrolidin)-yl-2-one
B.26	1-(3-ethyl-pyrrolidin)-yl-2-one
B.27	1-(3-propyl-pyrrolidin)-yl-2-one
B.28	1-(3-cyclopropyl-pyrrolidin)-yl-2-one
B.29	1-(3-isopropyl-pyrrolidin)-yl-2-one
B.30	1-(3-isobutyl-pyrrolidin)-yl-2-one
B.31	1-(3-allyl-pyrrolidin)-yl-2-one
B.32	1-(3-methoxymethyl-pyrrolidin)-yl-2-one
B.33	1-(3-ethoxymethyl-pyrrolidin)-yl-2-one
B.34	1-(3-propoxymethyl-pyrrolidin)-yl-2-one
B.35	1-(3-cyclopropoxymethyl-pyrrolidin)-yl-2-one
B.36	1-(3-isopropoxymethyl-pyrrolidin)-yl-2-one
B.37	1-(3-isobutoxymethyl-pyrrolidin)-yl-2-one
B.38	1-(3-allyloxymethyl-pyrrolidin)-yl-2-one
B.39	1-(3,3-dimethyl-pyrrolidin)-yl-2-one
B.40	1-(3,3-diethyl-pyrrolidin)-yl-2-one
B.41	1-(5-methyl-pyrrolidin)-yl-2-one
B.42	1-(5-ethyl-pyrrolidin)-yl-2-one
B.43	1-(5-propyl-pyrrolidin-2-one
B.44	1-(5-cyclopropyl-pyrrolidin)-yl-2-one

No.	R
B.45	1-(5-isopropyl-pyrrolidin)-yl-2-one
B.46	1-(5-isobutyl-pyrrolidin)-yl-2-one
B.47	1-(5-allyl-pyrrolidin)-yl-2-one
B.48	1-(5-methoxymethyl-pyrrolidin)-yl-2-one
B.49	1-(5-ethoxymethyl-pyrrolidin)-yl-2-one
B.50	1-(5-propoxymethyl-pyrrolidin)-yl-2-one
B.51	1-(5-cyclopropoxymethyl-pyrrolidin)-yl-2-one
B.52	1-(5-isopropoxymethyl-pyrrolidin)-yl-2-one
B.53	1-(5-isobutoxymethyl-pyrrolidin)-yl-2-one
B.54	1-(5-allyloxymethyl-pyrrolidin)-yl-2-one
B.55	1-(5,5-dimethyl-pyrrolidin)-yl-2-one
B.56	1-(5,5-diethyl-pyrrolidin)-yl-2-one
B.57	1-(pyrrolidin)-yl-2,5-dione
B.58	1-(3-methyl-pyrrolidin)-yl-2,5-dione
B.59	1-(3-ethyl-pyrrolidin)-yl-2,5-dione
B.60	1-(3-propyl-pyrrolidin)-yl-2,5-dione
B.61	1-(3-cyclopropyl-pyrrolidin)-yl-2,5-dione
B.62	1-(3-isopropyl-pyrrolidin)-yl-2,5-dione
B.63	1-(3-isobutyl-pyrrolidin)-yl-2,5-dione
B.64	1-(3-allyl-pyrrolidin)-yl-2,5-dione
B.65	1-(3-methoxymethyl-pyrrolidin)-yl-2,5-dione
B.66	1-(3-ethoxymethyl-pyrrolidin)-yl-2,5-dione
B.67	1-(3-propoxymethyl-pyrrolidin)-yl-2,5-dione
B.68	1-(3-cyclopropoxymethyl-pyrrolidin)-yl-2,5-dione
B.69	1-(3-isopropoxymethyl-pyrrolidin)-yl-2,5-dione
B.70	1-(3-isobutoxymethyl-pyrrolidin)-yl-2,5-dione
B.71	1-(3-allyloxymethyl-pyrrolidin)-yl-2,5-dione
B.72	1-(3,3-dimethyl-pyrrolidin)-yl-2,5-dione
B.73	1-(3,3-diethyl-pyrrolidin)-yl-2,5-dione

Table 30: Compounds of general formula (Id) wherein X_1 and X_2 are fluorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 31: Compounds of general formula (Ie) wherein X_1 and X_2 are fluorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 32: Compounds of general formula (If) wherein X_1 and X_2 are fluorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 33: Compounds of general formula (Id) wherein X_1 and X_2 are fluorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 34: Compounds of general formula (Ie) wherein X_1 and X_2 are fluorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 35: Compounds of general formula (If) wherein X_1 and X_2 are fluorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 36: Compounds of general formula (Id) wherein X_1 and X_2 are fluorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 37: Compounds of general formula (Ie) wherein X_1 and X_2 are fluorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 38: Compounds of general formula (If) wherein X_1 and X_2 are fluorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 39: Compounds of general formula (Id) wherein X_1 and X_2 are chlorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 40: Compounds of general formula (Ie) wherein X_1 and X_2 are chlorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 41: Compounds of general formula (If) wherein X_1 and X_2 are chlorine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 42: Compounds of general formula (Id) wherein X_1 and X_2 are chlorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 43: Compounds of general formula (Ie) wherein X_1 and X_2 are chlorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 44: Compounds of general formula (If) wherein X_1 and X_2 are chlorine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 45: Compounds of general formula (Id) wherein X_1 and X_2 are chlorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 46: Compounds of general formula (Ie) wherein X_1 and X_2 are chlorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 47: Compounds of general formula (If) wherein X_1 and X_2 are chlorine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 48: Compounds of general formula (Id) wherein X_1 and X_2 are bromine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 49: Compounds of general formula (Ie) wherein X_1 and X_2 are bromine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 50: Compounds of general formula (If) wherein X_1 and X_2 are bromine and n is 2, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 51: Compounds of general formula (Id) wherein X_1 and X_2 are bromine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 52: Compounds of general formula (Ie) wherein X_1 and X_2 are bromine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 53: Compounds of general formula (Ie) wherein X_1 and X_2 are bromine and n is 3, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 54: Compounds of general formula (Id) wherein X_1 and X_2 are bromine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 55: Compounds of general formula (Ie) wherein X_1 and X_2 are bromine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Table 56: Compounds of general formula (If) wherein X_1 and X_2 are bromine and n is 4, and the substituent R for each compound corresponds to a line B.1 to B.73 of Table B.

Formulation Examples (% = percent by weight)

Example F1: Emulsifiable concentrates	a)	b)	c)
active ingredient	25 %	40 %	50 %
calcium dodecylbenzenesulfonate	5 %	8 %	6 %
castor oil polyethylene glycol ether (36 mol EO)	5 %	-	-
tributylphenol polyethylene glycol ether (30 mol EO)	-	12 %	4 %
cyclohexanone	-	15 %	20 %
xylene mixture	65 %	25 %	20 %

Mixing finely ground active ingredient and additives gives an emulsifiable concentrate which yields emulsions of the desired concentration on dilution with water.

Example F2: Solutions	a)	b)	c)	d)
active ingredient	80 %	10 %	5 %	95 %
ethylene glycol monomethyl ether	20 %	-	-	-
polyethylene glycol (MW 400)	-	70 %	-	-
N-methylpyrrolid-2-one	-	20 %	-	-
epoxidised coconut oil	-	-	1 %	5 %
benzine (boiling range: 160-190°)	-	-	94 %	-

Mixing finely ground active ingredient and additives gives a solution suitable for use in the form of microdrops.

Example F3: Granules	a)	b)	c)	d)
active ingredient	5 %	10 %	8 %	21 %
kaolin	94 %	-	79 %	54 %
highly dispersed silicic acid	1 %	-	13 %	7 %
attapulgite	-	90 %	-	18 %

The active ingredient is dissolved in dichloromethane, the solution is sprayed onto the carrier mixture and the solvent is evaporated off *in vacuo*.

Biological Examples

Example B1: Action against Heliothis virescens caterpillars

Young soybean plants are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of test compound. After the spray-coating has dried, the soybean plants are populated with 10 caterpillars of Heliothis virescens in the first stage and placed in a plastics container. Evaluation is made 6 days later. The percentage reduction in population and the percentage reduction in feeding damage (% activity) are determined by comparing the number of dead caterpillars and the feeding damage on the treated plants with that on the untreated plants.

The compounds of the Tables exhibit good activity against Heliothis virescens in this test. In particular, the compounds 1.3, 1.4, 1.6 and 1.10 are more than 80 % effective.

Example B2: Action against Plutella xylostella caterpillars

Young cabbage plants are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of test compound. After the spray-coating has dried, the cabbage plants are populated with 10 caterpillars of Plutella xylostella in the third stage and placed in a plastics container. Evaluation is made 3 days later. The percentage reduction in population and the percentage reduction in feeding damage (% activity) are determined by comparing the number of dead caterpillars and the feeding damage on the treated plants with that on the untreated plants.

The compounds of the Tables exhibit good activity against Plutella xylostella. In particular, the compounds 1.4 to 1.12 and 1.18 are more than 80 % effective.

Example B3: Action against Spodoptera littoralis

Young soybean plants are sprayed with an aqueous emulsion spray mixture comprising 400 ppm of test compound and, after the spray-coating has dried, the plants are populated with 10 caterpillars of Spodoptera littoralis in the first stage and then placed in a plastics container. 3 days later, the percentage reduction in population and the percentage reduction in feeding damage (% activity) are determined by comparing the number of dead caterpillars and the feeding damage on the treated plants with that on untreated plants.

The compounds of the Tables exhibit good activity in this test. In particular, the compounds 1.3 to 1.7, 1.9 to 1.12 and 1.18 are more than 80 % effective.